CHAPTER 2

ANALYZING AND ADJUSTING

SALES DATA

ANALYZING SALES DATA

Arms Length Transaction. The first step of a sales analysis requires the verification of the sales. "Arms length transaction" sales qualify for analysis to determine market value. In the "Uniform Standards of Professional Appraisal Practice" (The Appraisal Foundation 1996, 10), market value is defined as follows: The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. "Market value" has been defined by the court in the case of Department of Revenue v. Transamerica Title Insurance Company, Court of Appeals of Arizona, Division 2, 570 p.2d 797, 117 Ariz 26 (1977). The court defined "market value," which is the basis for assessment of property taxes, as the highest price estimated in terms of money which property will bring if exposed for sale in an open market, allowing a reasonable time to find a purchaser who buys with knowledge of all uses to which it is adapted and for which it is capable of being used.

Some of the factors that must be considered before accepting the sale as a valid measure of market value include the following:

1. Was the sale between members of the same family or units of the same business? Such transactions tend to be not truly "arm's-length."

2. Was the sale to or from a governmental agency? As above, these sales tend to not be "arm's-length."

3. Was the sale a sheriff's sales or sold at auction for taxes?

4. Was the seller over-motivated to sell? Was the seller in need of a quick sale?

5. Was the buyer over-motivated to buy? The buyer had to find a place quickly.

6. Did either party appear to take advantage of the other or have knowledge not common to both parties?

Answers to each of the above questions give the appraiser pertinent information to determine the "arm's-length" nature or validity of the transaction. They do not necessarily invalidate the sale; rather they should cause the appraiser to study the sale more closely.

Factors Affecting Land Values. Appraisers analyze economic, social, legal, governmental, political, physical, environmental, and locational factors that influence land values.

1. **Economic factors.** To analyze land sales, an appraiser evaluates economic demand variables such as employment levels, wage rates, income levels and purchasing power, the availability of financing, interest rates, and transaction costs. Supply variables can vary substantially between areas, and they include the quantity of available land, development costs, construction costs, and financing costs. The relationship of the local economy, the regional economy, and the national economy require scrutiny by the appraiser to properly identify the effects of all the variables on land sale prices.

2. **Social factors.** People have the basic desire for territory and companionship. Also, cost and prestige of certain locations motivate people to desire one location over another. The social factors of age distributions, education, crime rates, and pride of ownership, need consideration when analyzing land use patterns and land sales.

3. **Legal, governmental, and political factors.** Local, regional, and national policies require evaluation to determine any effect on land sales prices in a given area. These policies affect the demand for land, and thus help drive sales prices. Policies on taxation, zoning, land use controls, and rent controls can hasten land development or retard economic growth. The presence of amenities such as access, egress, schools, public transportation, and fire and police protection influences demand and land sales price.

4. **Physical, environmental, and locational factors.** Site and situation attributes enable the appraiser to analyze and determine patterns and trends in land value.

   a) Site attributes establish value by allowing the owner to use the inherent resources and features of the land. Common features for consideration in an analysis include size, topography, and view.

   b) Situation attributes establish value by virtue of proximity or accessibility to other resources such as the central business district, a shopping center, a school, a freeway, a waterfront, a sewage treatment plant, or a dump.

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Stratification. In the appraisal of land, stratification clusters homogeneous properties according to area, zoning, neighborhood, and subarea. The categorizing of properties by zoning or probable use, location, and similar market influences produces useful groupings. These groupings allow the appraiser to apply values derived from market land sales to land parcels with similar characteristics or competing uses in the same area. These inferred values, based on market analysis and stratification reflect market value.

ADJUSTMENTS TO SALES PRICES

Adjustment Techniques. The occurrence of sale price adjustments for atypical financing, for time, and for property characteristics towards the characteristics of the benchmark establishes value based in the market. Market analysis that precipitates the appropriate adjustments shows what the comparable property would have sold for by eliminating differences between the comparable property and the subject property. Techniques to apply adjustments to comparable sales include adding and subtracting dollars, adding and subtracting percentages, and multiplying percentages. Lump sum dollar amount adjustments applied in any order will not distort the adjusted sales price. Percentage adjustments require the appraiser to make adjustments for land sales in sequence by first adjusting for atypical financing, then time of sale, followed by location, and finally, physical characteristics.

1. **Atypical financing.** Sales prices distorted by atypical financing require an adjustment first. In the case of land valuation, adjustments to sales price merit consideration when the lender and seller are the same party, the buyer assumes an existing mortgage or lease, the seller pays points, or the buyer pays existing tax liability. The appraiser should analyze the down payment and the rate of interest with a "seller carryback" or contract for sale arrangement. A sale with a seller financing at an interest rate above or below the market rate of interest would need an adjustment to reflect the market.

    a) **The amount of the down payment.** A low down payment could suggest an overstatement of the total sales price while a large down payment could indicate a firm sale price. With no down payment the buyer takes little or no risk, hence the seller might seek to compensate by increasing the sale price. If the amount of the down payment shows consistency with other similar properties exposed to the same market with similar financing, then the sale price requires no adjustment.

b)   **The amount of interest.** Generally, a financial institution will assign a market interest rate to the mortgage, so the sales price requires no adjustment. If a loan held in total or in part by the seller, it requires further study to see if the interest rate falls within a normal range for the market at the time of the sale. When a seller participates in setting both the sales price and the interest rate, the seller typically adjusts the sale price upward for lower than normal interest rates and downward for higher than normal interest rates.

Example. The property had a nominal sales price of $325,000 with 20 percent down and with seller financed interest of 8 percent for 25 years. Current market financing indicates that conventional lending agencies offer mortgage money at 10 percent.

What is the cash equivalent sales price?

1.   Contract amount (after 20 percent down)

   $325,000 - $65,000 = $260,000

2.   Principal and interest amortization factor for 10 percent loan for 25 years =

   0.110168[1]

3.   Principal and interest amortization factor for 8 percent loan for 25 years = 0.093679[2]

4.   Contract rate advantage

   0.093676 / 0.110168 = 0.85033

5.   Cash equivalent of contract amount

   $260,000 x 0.85033 = $221,086

6.   Cash equivalent of sales

   $221,086 + $65,000 = $286,086

The seller added $38,914 (or $325,000 - $286,086) to the sales price and offered below market interest of 8 percent.

To compute the contract rate advantage or the contract rate disadvantage, the appraiser compares the amortization factor of the contract loan rate with amortization factor of the

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[1] See Amortization Factor Table in the appendix in Property Assessment Valuation, 2nd Edition, published by the International Association of Assessing Officers.
[2] Ibid.

market rate. For example, consider a contract rate of 12 percent and a market rate of 10 percent.

1. Principal and interest amortization factor for 12 percent for 25 years = 0.127500
2. Principal and interest amortization factor for 10 percent for 25 years = 0.110168
3. Contract rate disadvantage = 0.127500 / 0.110168 = 1.1573

The contract amount needs an increase of 15.73 percent to compensate for the higher than market contract interest rate.

c) **The amount of assumed mortgage.** If a seller offers a below market interest rate, a favorable payment schedule, or both, typically a purchaser will assume the existing mortgage. In this case, the sale price needs a downward adjustment to reflect the market. The purchaser paid more to acquire a mortgage with a below market interest rate.

Example. The acquired property had a sale price of $500,000 with an assumed mortgage of $350,000 for 20 more years at 10 percent interest. The buyer paid $150,000 down on the loan. Current market financing indicates that conventional lending agencies offer mortgage money at 13 percent.

1. Amount of assumed mortgage = $350,000
2. Principal and interest amortization factor for 13 percent for 20 years = 0.142354
3. Principal and interest amortization factor for 10 percent for 20 years = 0.117460
4. 0.117460 / 0.142354 = 0.82513
5. Assumption rate advantage
    $350,000 x 0.82513 = $288,796
6. Cash equivalent of assumption
    $288,796 + $150,000 = $438,796
7. Sale Price = $500,000
    Cash Equivalent Value of Property = $438,796
    Value of Favorable Mortgage = $ 61,204

The seller demanded $61,204 (or $500,000 - $438,796) more when the buyer assumed the below market mortgage rate of 10 percent.

d) **Other financing.** Other financial features of the loan need conversion to their cash equivalent. Financial features that require conversion to their cash equivalent include balloon payments; wrap-around mortgages, variable interest loans, and "buy down" loans where payments are held down for the first few years. These financial arrangements could result in distorted total sales prices, and require careful study by the appraiser.

2. **Time.** Generally, if a property sits on the market for a short time prior to sale, many assume that a below market price caused the early sale. It does not necessarily follow that a property with a higher sale price that sits on the market for longer period of time has an above market selling price. If the property remains on the market for an extended period of time, the seller adjusts the price downward to make the property marketable, and the sale requires no adjustment for time on the market.

In a declining market or a rising market, adjustments for time from the date of sale to the assessment date by property type and by geographic area capture the effects of time on land sales price. A limited number of current year's sales in a dynamic market necessitate a time adjustment study. The time adjustment study supplements prior year's sales with current year's sales. The study indicates the percentage adjustment required to bring prior year's sales to reflect current market conditions. Adjustments by the month or the quarter from the date of sale to the assessment date accurately reflect the amount of change in the market due to time.

The four methods implemented by mass appraisers to adjust for time include sales ratio trend analysis, multiple regression models, resales analysis, and average unit value comparisons. Multiplicative multiple regression analysis models always assumes compounding adjustments. Regression analysis in an additive model develops the amount of change per period by regressing sale price per unit on sale month or sale quarter. Time adjustment factors applied on a straight-line basis or a compounding basis produce similar results, except in cases of extreme inflation or deflation.

Average unit value comparisons method tracks price trends by plotting per unit values over time. Sale prices can vary greatly with size, so track change in sale price on a per unit basis. Use the appropriate units, for example, front foot for waterfront and commercial land, square foot for residential land, and acres for rural land. Tracking median sale price per unit over time has the advantage of discounting the effects of extreme values, and capture typical price trends better than using the mean of sale prices per month or per quarter.

Example. The line chart below shows median sale price per acre for ranchettes (rural land) during a thirty-six month period. The upward trend in the line indicates inflation.
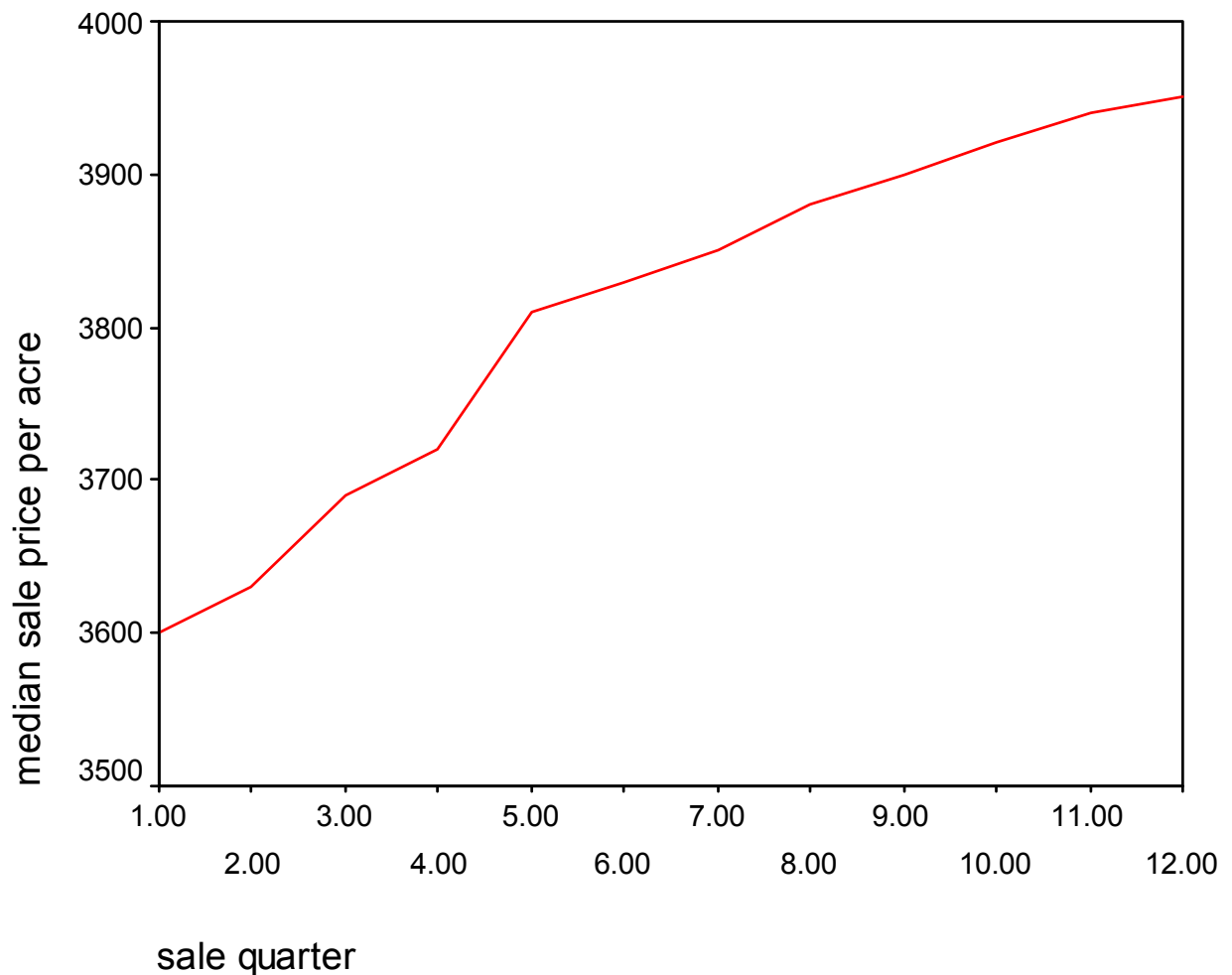
Since the data are regular and show a relatively constant increase from month to month, we can use the average unit value comparison method. Calculate the percent of change per quarter as shown below.

Total change = (3,950 – 3,600) / 3,600 = 0.0972;

Rate of change per quarter = 0.0972 / 11 = 0.00884;

Percent change per quarter = 0.00884 x 100 = 0.884.

Counties with computer capabilities could implement regression analysis to develop the amount of change per time period. This example assumes quarterly adjustments, and the schedule below allows the appraiser to adjust the sales to the appraisal date.

TIME TREND SCHEDULE

Quarter / Year	Quarter	% Adjustment
01 / 97	1	9.72
02 / 97	2	8.84
03 / 97	3	7.96
04 / 97	4	7.07
01 / 98	5	6.19
02 / 98	6	5.30
03 / 98	7	4.42
04 / 98	8	3.54
01 / 99	9	2.65
02 / 99	10	1.77
03 / 99	11	0.88
04 / 99	12	0.00

3. **Comparability adjustments.** Comparable land sales selected from properties with the same or similar use and within the same market area have the fewest adjustments, and give the best indication of value. Only through a careful study of the land sales data can the determination of the appropriate adjustment factors result.

EXAMPLE. A vacant lot sold one year ago for $50,000 with typical financing. An increase in vacant land sales prices at a rate of 10 percent per year reflects current market conditions. Since the sale took place one year ago, the necessary adjustment that reflects market as of

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the assessment date equals 10 percent, or $5,000. Through a market study, the sale comparable lot, located on a golf course, commands a 20 percent premium. Due to the superior location of the comparable lot, a reduction of the time adjusted selling price of $55,000 by 20 percent, or $11,000, reduces the base lot to an indicated value of $44,000.

Sale	Time Adjustment	Time Adjusted Sale	Location	Net Adjustment	Indicated Value of Typical Lot
$50,000	+10%	$55,000	-20%	-20%	$44,000

Example. A flood prone substandard lot requires fill added to the back area to make it useable. Upon careful market analysis, the estimated "cost to cure" equals $4,400. The substandard lot sold for $36,000 one year ago with typical financing. After adjusting the sale for time by increasing the sale price 10 percent to $39,600, the sale price of the substandard lot needs an adjustment increase of $4,400 because the base lot does not have a flooding problem. The $4,400 adjustment gives an indicated base lot value of $44,000.

Sale	Time Adjustment	Time Adjusted Sale	Location	Physical Features	Indicated Value of Typical Lot
$36,000	+10%	$39,600	0	+$4,400	$44,000

4. **Excess Land Adjustments.** Vacant unimproved land in excess of that required by zoning for the operation of the improvements, for the service of the improvements, or for the support of the improvements defines excess land. Excess land provides a buffer between adjacent properties, serves as an investment, allows for extra parking, or gives options for future expansion. A market analysis of similar properties in the area will indicate the value of the excess land.

    A subject property consists of 500,000 square feet. Comparable properties of similar size sell for $15.20 per square foot. Therefore, the estimated value of the property

equals $7,600,000 (500,000 square feet x $15.20 per square foot). At times appraisers cannot find comparable sales of similar size. In these cases, the minimum site size essential for the service and support of the improvements merit consideration. The adjustment process for excess land involves the analysis of sales to determine the minimum site value and the square foot value of any excess land. Zoning sets the restrictions for different types of residential, commercial, and industrial land.

Example. From the previous scenario, assume zoning requires 400,000 square feet for a shopping center, which leaves a remainder of 100,000 square feet of excess land. An analysis of various sized properties with similar characteristics indicates a value of $16.00 per square foot for the minimum site, and $12.00 per square foot for the excess land. Calculate the value of the excess land separately and add it to the land value essential for the service or support of the improvements.

Minimum site	(400,000 square feet x $16.00)	$6,400,000
Excess land	(100,000 square feet x $12.00)	$1,200,000
Total site	(500,000 square feet x $15.20)	$7,600,000